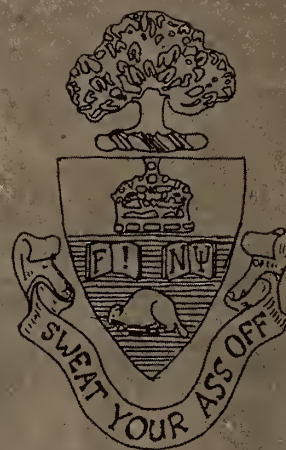


FEBRUARY 1976

journal of engineering science



ENG SCI TRIUMPH IN
CHARIOT RACE

toike oike press

Check out the High Performance 21

32 pre-programmed functions... an addressable memory... and famous HP quality— all in a unit so small it comfortably fits in a shirt pocket.

The HP-21 is the lowest-priced scientific pocket calculator HP offers, yet it has all the functions and features you'd expect to find in a scientific pocket calculator—even more than in the HP-35.

More trigonometric capabilities



Coordinate conversions—Convert polar coordinates to rectangular coordinates, or vice versa. This lets you do vector arithmetic quickly and easily.

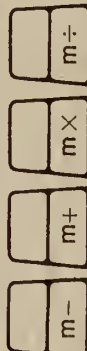
DEG RAD

Angular mode selection—Just flip a switch to perform trig operations in either of two angular modes: degrees or radians. You can also convert angles from one mode to the other push-button fast.



Standard trig functions—The HP-21 gives you all of the standard trig functions: Sin x, Arc sin x, Cos x, Arc cos x, Tan x and Arc tan x.

Full register arithmetic



Register arithmetic—The HP-21 has an addressable memory for storing constants or other data, for use later on in a calculation. Any of the four arithmetic operations may be performed directly upon this stored data.

Plus other quality HP features

The HP-21 also includes a four-register stack, which makes possible the famous RPN "computer logic" system (see pages 20, 21).

Light-emitting diode display

Recessed for better contrast in harsh lighting. Displays up to 10 significant digits (eight plus two-digit exponent in scientific notation), and appropriate signs. Two selectable display modes: fixed point, with automatic overflow and underflow into scientific, and scientific with a dynamic range of 10^{99} to 10^{-99} . Automatic decimal point positioning. Selective round-off; range: 0-10 (in scientific, 0-8). "ERROR" appearing in display indicates improper operation. Lighted decimal points indicate low battery condition.

ATTENTION ENGINEERS

\$129.00



Functions and features

Keyboard commands:

Trigonometric functions: 2 angular modes • Sin x • Arc sin x • Cos x • Arc cos x • Tan x • Arc tan x • Rectangular coordinates ↔ Polar coordinates

Logarithmic functions: Log x • Ln x • e^x • 10^x

Other functions: y^x • \sqrt{x} • $1/x$ • π • Register arithmetic • Addition, subtraction, multiplication or division in serial, mixed serial, chain or mixed chain calculations

Data storage and positioning

Operations: Data entry • Stack roll down • x, y interchange • Data storage • Data recall • Change sign • Exponent entry

Memory:

4-register stack • Addressable memory

Specifications:

Power: AC: 115 or 230 V, $\pm 10\%$, 50-60 Hz • **Battery:** 350 mW nickel-cadmium rechargeable battery pack
Weight: HP-21: 6 ounces (170 g) with battery pack • **Recharger:** 5 ounces (142 g) • **Shipping weight:** Approx. 1 1/2 lbs. (680 g)

Dimensions: Length: 5.1 inches (13.0 cm) • Width: 2.7 inches (6.18 cm) • Height: 1.2 inches (3.0 cm)
Operating temperature range: 32° F to 113° F (0° C to 45° C)

The HP-21 outfit includes:

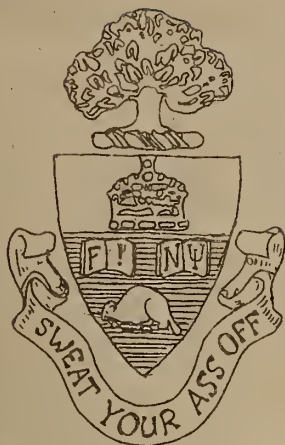
- HP-21 Scientific Pocket Calculator • Rechargeable battery pack • 115/230 V AC adapter/recharger • Soft carrying case • Illustrated Owner's Handbook

Logarithmic capabilities



Standard log functions—The HP-21 also gives you all of the standard log functions: log x, ln x, e^x and 10^x .

BOOKS UNIVERSITY BOOKROOM



journal of engineering science

Editor: ERIC HARTWELL

Assistant Editor: HEIDI BRESLAUER

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toike oike press

The Toike receives financial assistance from



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COVER STORY - The triumphant Engineering Science Chariot Race Team (TEAM UGLY) adopting a victorious pose after last week's surprise race result. The invulnerable chariot is constructed from generously donated steel and fibreglass. Specially designed and built by Eng Sci 7T6, it rolls over and through bodies. (Photo courtesy Roadentroike Magazine).

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letters

Dear Ms. Oike.

Don't think that we let those nurses Joikes go by unnoticed. We saw them all CUMming. There is no truth to the rumour that all nurses are easy pickups...some resemble station wagons, vans and even rabbits. If you don't watch your mouth we're going to send the happy faggot down and then you'll be sorry (kissy, kissy).

The nurses at
Centipee-ed Colledge

Dear Godiva:

Well here it is Jan. 30, nine (9!) days after our marks were supposed to be sent out. Yes, we **do** care about what we failed last term! This is pretty ridiculous considering that the Faculty office had all of our marks by Dec. 31. I think that a lot of money could be saved by setting up a system similar to that used for registration. A room could be specified beforehand so that on a given day you could just walk in and pick up your marks. For those who don't get around to getting their marks on that day, then the remaining sheets could be mailed. There are about 30,000 students at U of T so that by **not** mailing the marks, the university could save \$2,400 (see even we know how to multiply!). Just think, with that \$2,400 we might even be able to get some real coffee in the Annex and throw out the used dishwater being presently sold!

Yours truly,
Dave Schenck
Eng. Sci. II

Dear Box ...

We, a group of (engineers) who frequently use the engineering anus (er, annex), propose that the french fry machine be removed from the annex as soon as possible. It should be placed in either a suitable artsie establishment (for example, the Simple Samuel's Library) or the annex washroom. The latter is a better solution since the addition of this fourth urinal would speed up lunch hour line-ups. Our dilemma is expressed as follows:

1. The french fry machine is incongruous with annex decor.
2. Some degenerate person (Hernando?) has been sabotaging the french fry machine with porous rubber condoms. This not only jams up the delicate mechanism of the machine but it is indegestible.
3. We feel that the P.E.I. potato farmers are being mercilessly exploited.
4. Last but not least, think of the benefits of replacing the french fry machine with a new condom dispenser (stocked with new tutti-frutti rainbow contraceptives).

What should we do?

Yours truly,
Engie Tech McArtsman
Eng. Sci. 7T8

Dear Editor:

Knowing how intent your paper is on new material, our company — Group Grope Inc. — has come out with a fan club, the Mondo Kinky Fan Club, and are asking your assistance by publishing the material in the next Toike, for which we have great respect.

Our advertising goes along the same lines as your feature. Unfortunately, our group has no income (we don't charge the females) so therefore we are unable to pay for it. This is why I plead with you, Sir! To publish our work could be a great work of art. For all you know, our club could become the catalyst of

something big, a nation-wide fan club.

Right now, we are in the process of getting in touch with other universities such as Western, Laurentian, Trent, Ottawa, Queens ... to bolster our unique fan club. If it grows to epidemic proportions, sweeping the campus, TOIKE OIKE will be made an honorary member. Can you just imagine: TOIKE OIKE MADE HONORARY MEMBER BY THE MONDO KINKY FAN CLUB.

What a headline!! What commotion!! This could be the start of something big.

Sincerely yours,
Mondo Kinky and Group Grope

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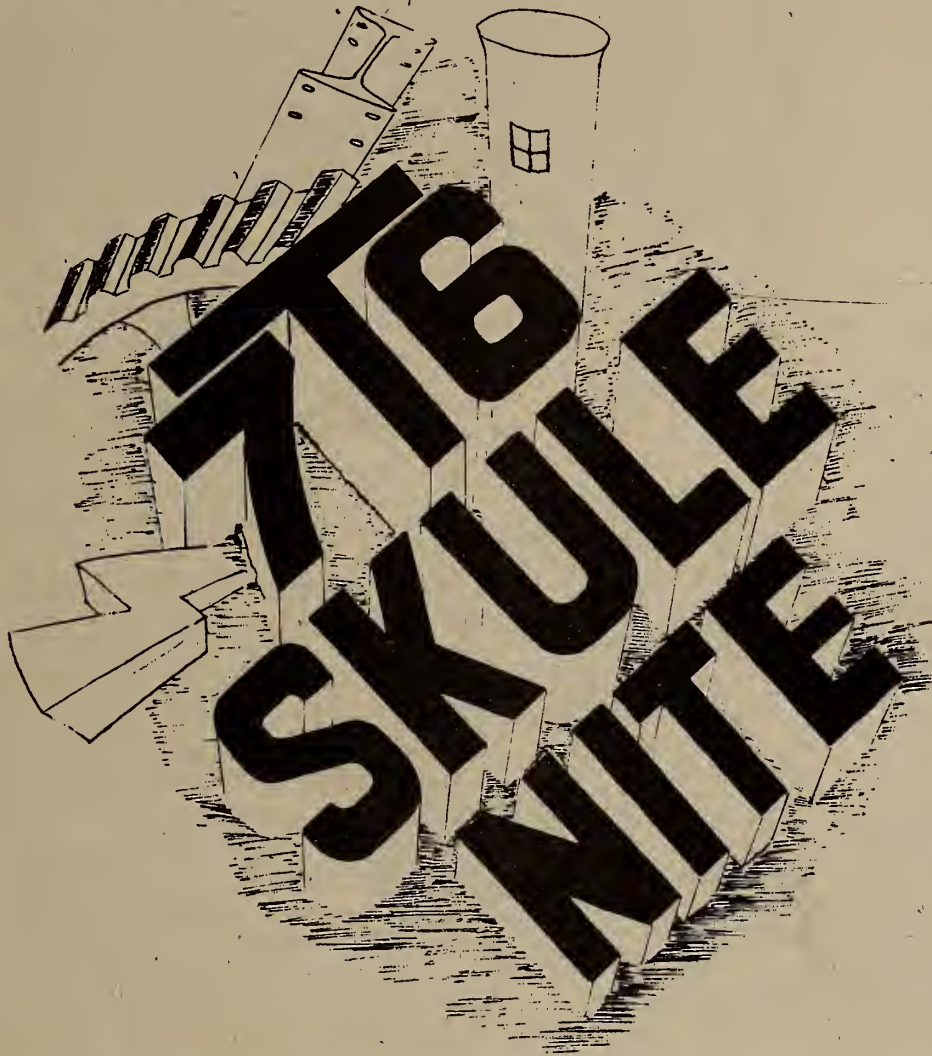
or

The Dean of Engineering
Applied Science

CLOSING DATE MARCH 5th, 1976

The U of T Engineering Society
with permission of the Drama Society

PRESENTS



HART HOUSE

THEATRE

FEB. 11-14

8:30 p.m.

TICKETS

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and Hart House Ticket Office**

sub-urban vehicles



ENG SCI TRIUMPH IN CHARIOT RACE

by Dinsdale Piranha

Friday, January 30, 1976 — a day that will not live in infamy. They came, they ran, they bled ... and as the smoke cleared, the anguished survivors wretchedly huddled around the flaming wreckage of what had once been a fleet of proud and glorious sub-urban vehicles.

Nobody (except first year) wrote a chariot race article.

Engineering Science's incredible invulnerable Ugly Machine finally obliterated the feeble opposition on this, its third venture against the plebian hordes.

Any rumours to the contrary (such as Mechanical conquering (good), with Geological second and Eng Sci disqualified) should be treated as the vicious imperialist propaganda from the running-dog lackeys of the Mechanical-Industrial complex that they obviously are.



7T9 Fakes it Again

by Rob Yates

Award with one Eng Sci and several normal F!rosh, they headed for their destination; SF. With miscellaneous parts they banged 'till the wee hours of themorning, creating what would soon be the "F!rosh chariot". Four wheels, a drum and some rope was enough to create the winning F!rosh chariot. After passing the timed final down New Collich hall, the beast was stored till next morning, when the 650 strong F!rosh class would show the Electricals, Industrials, Chemicals, and Metallurgists who was boss on this campus. Dawn broke, the chariot hadn't yet. After a quick paint job the great



F!rosh chariot headed for front campus. A driver was abducted and secured, the cannon resounded, the band played, the F!rosh lost two of its four wheels, the race had begun. Then some SOB cut the rope. Repairs were in order, the race continued.

Again the rope was cut, but the F!rosh with a strong showing of 20 out of 650 pulled away only hindered by several jocks who joined Mech for a day. The rope was again cut, the F!rosh pushed on determined to finish. Tying another reefer knot, the chariot with 8 F!rosh power headed for the line. At the Finnish they were heralded by cheers from the crowd and mobbed by female supporters, until they realized the line was still 5 feet hence. Knowing they'd already won, victory came quickly and easily, with the F!rosh beating out all but the winners. What spunk, what fortitude, what spirit, what happened? F!rosh of the world unite, just wait till next year, but next year we won't be F!rosh, oh well, you can only blow it once...



ecology

How To Dress a Bunny

By Matt Kent from **MECHANIX ILLUSTRATED**, Dec. 1975 (vol. 71, no. 571)

THE No. 1 small-game animal in the U.S. is the cottontail rabbit. He's the preferred quarry of many experienced hunters as well as a favorite of beginners. About 30 percent of all ammunition produced in America is fired at cottontails and it is estimated that about 40 million rabbits are bagged every year in North America.

Unfortunately, when a cottontail finally reaches the dinner table, the expectations of many hunters drop after the first bite. But it's mostly their own fault. When they shot the rabbit they probably stuffed it intact into a rubberlined game pocket, dressed it out hours later and then simply sliced the carcass open and yanked out the innards in one crude pull.

Of course no deer hunter would wait till the end of the day to dress his buck. Nor would he remove the stomach and intestines with the anal

vent and genitals connected to the carcass. If he did, the venison would be tainted by juices and waste from broken intestines, etc. The same care in field-dressing must be taken with cottontails as any other game to insure good flavor.

Fortunately, the entire dressing and skinning job takes only about five minutes when done correctly. Placing the cottontail on its back, the first step is to make a small incision in the hide, just forward of the anal vent. Cut through the hide and into the body cavity, but avoid any contact with the body organs. A slip here means punctured intestines and tainted meat. The best way to make this incision is to pinch a fold of hide between two fingers, pull it away from the rabbit, then make the cut. A sharp pocketknife with a 3-in. blade is easy to carry and ideal for dressing rabbits.

Next, keeping the cutting edge of your knife away from the body or-

gans, cut up into the brisket and spread the opening with your fingers to expose the internal organs. Then reach up into the brisket and sever the windpipe. Gently separate all body organs from the cavity. But don't remove the organs yet. This is where many hunters go astray. They pull out intestines, stomach, etc., with the anal and urinary canal still connected.

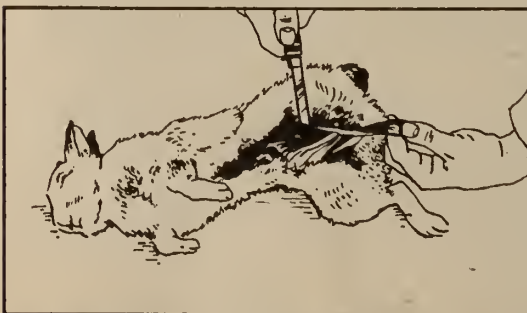
Instead, cut around both sides of the anal vent and genitals, and down between the pelvic bones. Cut these completely away from the carcass. When these organs are separated, intact, gently pull the mass of organs out of the cavity. There may be some membrane still connecting the organs to the carcass, so carefully cut through this tissue. Do not yank or tug, which may burst an intestine or squeeze body waste onto the meat.

At this stage, many hunters stuff their field-dressed rabbit into a hot, nonporous, rubber-lined game pocket. Though the cottontail may be small, its meat must still be cooled. Because of the size of a cottontail, the cooling process is simple. Using a light cord or leather thong, hang the rabbit from your belt for 1 to 2 hours.

Many hunters prefer to skin their rabbits in the field, and this process is even easier than field-dressing. With the field-dressed cottontail on its back, work the fingers of both hands between the hide and body on both sides of the rabbit. When your fingers meet between the backbone and hide, grasp the body with one hand and the hide with the other. Then pull apart slowly but firmly.

The hide will peel away from the body easily until it reaches the head and leg joints. At this point, cut the head off. Then cut the feet off at the first joint. It helps to bend the knuckle joint backward. Then cut through the joint.

Sometimes there will be a tendency for the hide to hang up at the tail or anal region. When this happens, just cut the hide away. A supply of plastic bags is handy if you skin your cottontails in the field. ●



FIELD-DRESS a rabbit in three easy steps. First, make an incision into the body cavity. Second, cut up into the brisket and sever the windpipe. Third, loosen the internal organs and cut away the anal vent intact with genitals. To skin animal, pull hide away from body.

The Art of Hunting Mushrooms

by Michael Ellis

One of the "great American pastimes" that has just spilled over into Canada is not the San Francisco Giants, but a new form of big game hunting: Mushroom Hunting. Many a great American game hunter has in his den; either a stuffed mushroom head, or the rack (antlers) from a ferocious Bull mushroom.

The abundance of wild mushrooms in our woodlands has inevitably led to teams of American hunters invading the Canadian forests in search of herds of wild mushrooms. To prevent a catastrophic depletion of wild mushrooms, a limit has been placed on the number of mushrooms that can be shot in a day. The limit will be a six quart basket, of which only four quarts can be female, that is, cow mushrooms. Any number of bulls, up to the six quart basket limit, may be shot. To prevent many mushrooms from being taken south of the border, to the U.S., the mushroom season for Americans and in general non-Canadian citizens, will open two weeks after the official opening for residents of Canada.

The growing popularity of mushroom hunting has the commercial mushroom trappers worried. They claim that hunters are depleting the known mushroom herds at an alarming rate, which poses a threat to the trapper's livelihood. The trappers are also worried about the use of leg hold traps in trapping mushrooms. They



say that leg hold traps are cruel and inhumane, since they do not kill the mushroom instantaneously, and it may be a matter of hours or days before the mushroom finally dies, usually in intense pain. Conservationists demand that 'live' traps be used, then the trapper can shoot the mushroom, killing it instantly, when he checks his traps. However, 'live' traps for mushrooms are far more expensive.

Another concern to conservationists, is the ever increasing numbers of mushrooms being killed on the highways. Every

year, hundreds of mushrooms, many of them calves, are killed at night, when the lights of the cars appear to paralyse them, leaving them frozen in their tracks. Many motorists see the mushrooms too late, rendering expensive damage to their cars and death to the mushroom. "Mushroom Crossing" signs are being erected now all over Canada, hopefully inspiring increased awareness in the drivers so that the number of mushrooms slaughtered on the highways will decrease.

Mushrooms can be shot in two ways. One method is to use a rifle or shotgun. However, many sportsmen prefer to use a bow and arrow. Both methods require skill in tracking mushrooms. The most common method is the one devised by John A. Celery. It is known as the "Celery Stalk". Actually it involves the use of ingenious disguises and the ability to follow mushroom tracks. Some hunters prefer to use tree forts and wait for the herds to pass beneath them. This is fine if hunting for food, but if one is looking for a trophy for his den, there should be very little damage to the head, which is almost impossible when shooting from above. Most big time mushroom hunters agree that the best place to hit the mushroom is just below the head, through its heart if possible.

In Quebec, many people hunt the French ancestry of the mushroom; that is the "Toad Stool" (ribbit).

When hunting wild mushrooms, one must remember not to dress like a mushroom, as there are many fatal shooting accidents every mushroom season.

Next issue will discuss the care and breeding of domestic grapes for fun and profit.



Lewis functions smoothly.



John Wayne . . . lookout!

high society

Cannonball

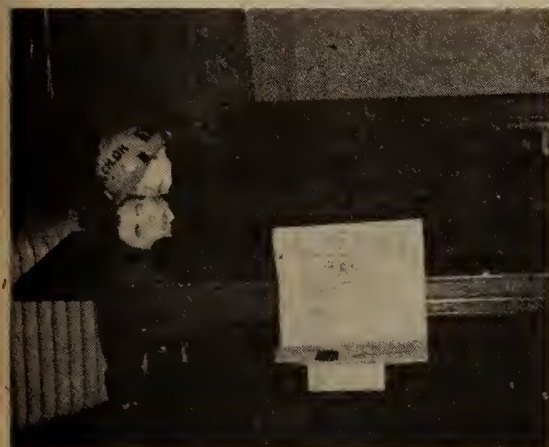
by Robby West

On Saturday, January 24th, at Hart House, a couple hundred of yer peculiarly attired couples tippy-toed the night away to the magical lilting strains of Detroit's answer to the Mormon Tabernacle Choir, Joust. Those so inclined spent quiet interludes being grossed out by that master of the banjo and musical wit, Bob Bossin, and his stringband.

However, the highlights of the evening had to be the judging of the 'Intercourse' competition and the Cannonball Queen. Under the capable leadership of that mistress of ceremonies, Leslie Electrical and accompanied by several soothing (?) renditions of the L.G.M.B., Engineering Science was announced as winner of the 'Intercourse' competition breaking Mechanical's record of 69 consecutive victories.

Nevertheless and notwithstanding, your cumly third year nurse-type garnered that coveted(?) title of Cannonball Queen (not to mention 16? roses), representative of — oh gosh, how coincidental — Engineering Science. Mrs. Stoicheff was not pleased when Bashful Boris insisted on an indepth (?) interview with Janet Ross (your queenly type).





Mechanical Intercourse

It's too bad that this faculty is turning into another art college on campus! Yes I'm afraid that's what it's cum too, a bunch of apathetic uncultured artsmen. Why? Well tell me Skulemen where were the Cannonball intercourse displays. Only three shining stars of the faculty, Mechanical, Civil and NY (it hurts to admit the last one) managed to put forth any effort. It is for this reason that the Department of Mechanical Engineering declares that the faculty consists of only three disciplines, you other pigeons can find a roost on U.C.! (Oh dat's a college).

Getting back to the immediate issue, we the students of Mechanical Engineering must viciously protest the judging of the Intercourse Competition. We consider ourselves the victors in this event for several reasons:

1. The theme of the competition was "Entropy" (hey! did you other guys know that?). The Mechanical Engineering display was the only one on which the word appeared. It was the only one in which any attempt was made to relate the theme to the exhibit.

2. Our display was the only one that related the department to the exhibit. By our ingenious use of mechanisms and motion, characteristic of our study we accurately represented our interests. (Our conclusion is NY students sleep a lot and civils are alcoholics).

3. The display of Mechanical had 2 added motions than that of our competitor. Now we're not sure that they copied our idea but we think that we showed a little more ingenuity in our construction as well as the added complexity.

It is for these reasons that the entries of Civil Engineering and Engineering Science are disqualified and the Department of Mechanical Engineering is declared the winner!

Al Conquergood



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PRESENTS

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OF ALL ENGINEERS AND THEIR DATES



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7:00 P.M. — COCKTAIL RECEPTION

8:00 P.M. — AWARDS PRESENTATION

9:15 P.M. — 1:00 A.M. DANCING

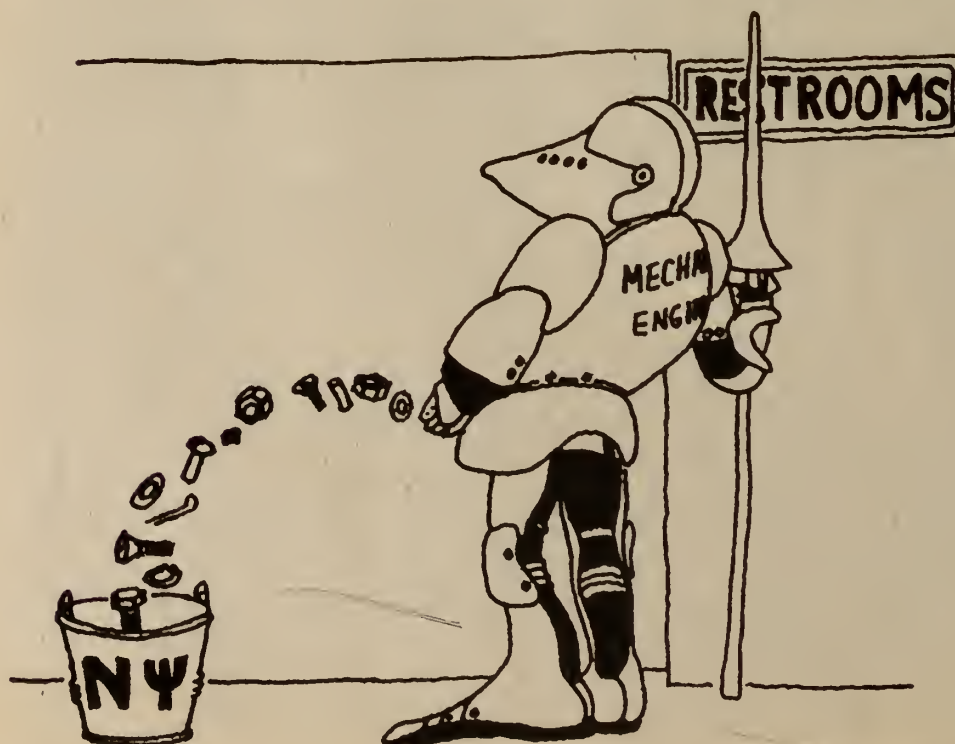
ADMISSION IS FREE - TICKETS AT ATHLETIC STORES

Cash Bar

No Jeans Please

eng sighs

DOONESBURY



A recent survey of Eng Sci students revealed that 90 per cent were virgins...at one time or another.

The same survey showed that 90 per cent of those who have tried Camels still prefer women.

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We stress the preparation of graduates to fully professional depth in a set of fundamental skills, thereby helping them to transform future unforeseen career demands into new career opportunities throughout their professional lifetimes.

Our approach is readily distinguishable from, and complementary to traditional MBA programmes, which expose their students to a wide spectrum of current successful management practices via "case study" methods and the use of advanced management terminology. Typically, their goal is early placement of the graduate in line management. By contrast, our goal is the development of professional staff. Because of his skill in quantitative and qualitative management problem solving, our graduate may work in staff positions at any level of the enterprise. By concentrating in depth on Applied Economics, Operational Research, and Organizational Behaviour (normally specializing in one of these areas), our graduate is well prepared for analytical and advisory work in a broad range of positions and occupational settings.

Studies focus on the use of mathematical and statistical models and the communication of their implications to executives, rather than on familiarity with current managerial language and institutional practice.

Our graduates have obtained positions both inside and outside Canada with major private corporations, with prominent consultants to private and public clients, and with governments.

Our programme has been recognized in "The Ring of Iron" as one of the very few *Centres of Excellence* in Ontario graduate education in Applied Science (1970). Noteworthy also is the recent report of independent consultants to "ACAP", which stated:

"...there has been a concentrated attention on areas congenial to engineering. A high quality programme concentrating on depth rather than breadth has resulted..."

Analysis of career patterns has revealed that over one half of the graduates in engineering are employed in an exclusively technical capacity for only a fraction of their careers. On less adequate data, such a pattern is visible also for graduates in other fields. For these individuals, management functions become increasingly important throughout the major part of their careers. In a related finding, over two thirds of those who continued technical work, were found, 15 years later, in occupations requiring activities considerable different from those related to their degrees. Such high mobility, often containing an upward, supervisory component, has been available to the typical successful engineer, and to many others. In modern conditions, preparation for such mobility, through the acquisition of skills in managerial thinking, appears to be increasingly important. Our areas of study have been selected with this trend in mind.

Faculty research activities are emphasized heavily in our department, providing students with diverse opportunities for their required project or thesis work. We believe that contact with, and participation in some management sciences research activity is highly beneficial to the student. Current research topics include inventory and production scheduling problems under uncertainty, the economics of public enterprises, capital market problems and portfolio management, the design of information systems, and studies of worker motivation.

Detailed information regarding course offerings, areas of study, faculty members, time requirements, fees, and financial support is available from:

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Department of Management Sciences,
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toiknology

THE POLITICS OF FUSION

from FUSION ENERGY FOUNDATION NEWSLETTER, Dec. 1975

Presidential Statement on Fusion Sabotage

NEW YORK, Oct. 12 (IPS) — Lyndon H. LaRouche Jr., 1976 presidential candidate of the U.S. Labor Party, announced today conclusive evidence of an operational policy to systematically undermine controlled fusion research as the precondition for the discrediting and extinction of the U.S. fusion program. The Labor Party has called for a full Congressional investigation of this criminal sabotage by the Rockefeller-Ford Administration and is making available to the appropriate Congressional committees complete documentation.

"The shift from a policy of retarding development to one of consciously forcing failure is now being implemented in order to eliminate the most obvious alternative to the manifestly insane Energy Independence Authority (EIA)," LaRouche said. "The EIA is the institutional base through which the demented Rockefeller brothers hope to conjure up a multi-billion dollar prop for their patently bankrupt holdings. The cost of such a scheme is nothing less than the final gutting of American industry and labor power.

"In escalating their crazed looting demands from \$100 billion to \$800

billion, then several trillion for the EIA — as Vice President Rockefeller did in a recent speech — the Rockefellers are demanding that the world's most advanced work force be reduced to the hand-squeezing of shale oil.

"In contrast, the development of fusion — safe, cheap, and unlimited energy — would assure the advance of the economic infrastructure necessary for the maintenance and development of the U.S. as the key sector in world development. Therefore, it is no exaggeration to say that the planned gutting of fusion is Rockefeller and Company's most criminal act to date.

"The essential feature of the operational policy to abort fusion research is the step-by-step procedure of cutting back and narrowing down the scientific base of development. The burden of achieving reactor conditions will then be left to one device, the Tokamak, which, as presently conceived, cannot provide sufficient net energy density. In fact, it can be demonstrated that, despite significant research advances, this is true for all individual fusion devices presently under development.

"Yet ERDA has eliminated any meaningful scientific work at Oak

Ridge National Laboratory except as a technological adjunct to the Tokamak program at Princeton University and has stated its intention to eliminate scientific work on another approach to magnetic confinement — reportedly the Syllac-Theta Pinch. The loss will not be a mere 33 per cent; at this critical stage of scientific development, which demands that all plasma regimes be investigated in order to converge on a solution, the loss is incalculable. Moreover, ERDA has engineered a sharp curtailment of work on exploratory concepts, the obstruction of access by the Los Alamos laser fusion group to vital computer codes at Livermore, the arbitrary clamping of classification on non-governmental work, and increased harassment of leading independent researchers.

"Simultaneously," LaRouche concluded, "the CIA has attempted to obfuscate the reality of the qualitatively more advanced Soviet program through press and other attacks on U.S.-Soviet cooperation — most notably the recent awarding of a Nobel Peace Prize to dissident Soviet scientist Sakharov."

Watch for the FEF on campus — they want to talk to you about the future of fusion power.

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Topological Electronics

from ANALOG SCIENCE
FICTION/SCIENCE FACT

August 1971

G. Harry Stine

Does the circuit have two wires, or one? Does the electron know which way it's going when it goes two ways simultaneously? But whichever way it goes, the physicist has achieved the hitherto known to be impossible — a noninductive resistor!

Ever since the German mathematician Mobius first studied the topological phenomenon of the two-dimensional, one-sided surface that now bears his name, the Mobius strip has been a fascinating and somewhat baffling conversation piece and mathematical curiosity. It can be easily fabricated by anyone, mathematician or idiot, who has a piece of paper, a pair of scissors, and some sticky tape. Just cut a strip of paper, bend the two ends around to each other as though you were making a paper ring, twist one end of the strip 180-degrees, and then tape the two ends together. As nearly every grade-school mathematician knows, the resulting centry-old concept of the Mobius strip has only one side and one edge — a two-dimensional anomaly in a three-dimensional universe.

The Mobius strip remained a curiosity until R. L. Davis at Sandia Laboratories in Albuquerque, New Mexico, began working on ways to make nonreactive resistance units. Davis wanted very low resistances and very low reactances. It's very difficult to make a pure resistance unit that also has a very low capacitive reactance as well as very low inductive reactance. Our three-dimensional universe just doesn't normally permit it.

But Davis thought of the Mobius strip. Obviously, if you can't make a nonreactive resistor in three-dimensional space, you can make one in two-dimensional space!

To make his first Mobius resistor, Davis laid aluminum tape conductor on a strip of masking tape. Two strips of aluminum tape of equal length were used. The opposite ends of the conductors were soldered together opposite each other for the resistor's terminals.

This first Mobius resistor had a 0.022-ohm resistance and a residual

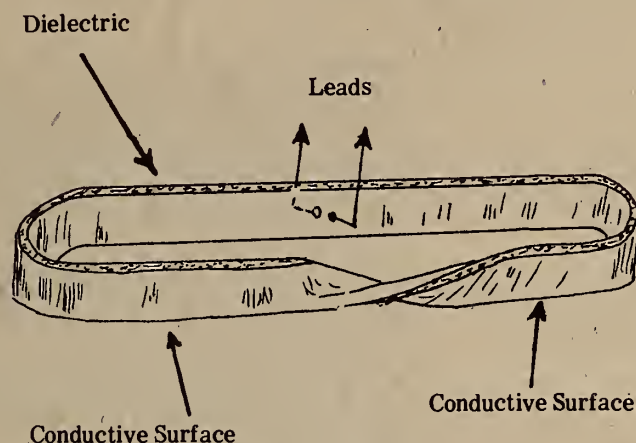
reactance of 0.003 microhenries! As a result, its time constant was 1.3×10^{-7} seconds, which is very low for such a low value of resistance.

Immediately, other Mobius resistors were made using various dielectrics, lengths, and bifilar wire in addition to tape. Resistances as high as 80 ohms were made having exceedingly low reactances that had to be measured in terms of fractions of microhenries and picofarads.

The Mobius resistor exhibited some very interesting features right off the bat. For one, it wouldn't couple to other metallic objects or to itself! Hooked up to a measuring bridge, the Mobius resistor could be handled or changed in form without disturbing the bridge.

Davis also made two resistors lying parallel on the same Mobius surface and separated by $1/16"$. The two resistors completely ignore each other, regardless of the way they are hooked up — series or parallel! And the residual reactances obey the same rules of inductance coils having no mutual coupling. Thus, Mobius resistors can be connected in either series or parallel to vary resistance values without changing the time constant from that of a single unit.

The actions of a Mobius resistor on a pulse are fascinating to contemplate. When the pulse enters the Mobius resistor at the terminals, it splits into two equal pulses because the impedance is identical



in both directions...except that one is right-handed and the other is left-handed, so to speak, with respect to the direction of their energy and magnetic vectors. Therefore, they can effectively pass right through each other and do not interfere or cancel each other as they proceed around the Mobius strip and back to the terminals. The differential equation that describes this activity has two solutions, but for ordinary geometrics in resistors only one solution is used. This caused a bit of confusion at first when attempts were made to understand what was happening to the pulses in the Mobius strip.

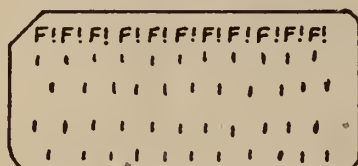
(If the investigators were confused, how about the electrons?)

This fascinating application of topology to electronics — or electronics to topology, if you will, because topologically it may not make any difference — has been granted a U.S. patent, which is also fascinating reading!

REFERENCES

1. NASA Tech Brief B68-10267.
2. U.S. Patent No. 3,267,406, "Non-inductive Electrical Resistor," R. L. Davis, August 16, 1966.
3. "Design Formulas for Nonreactive High-voltage Pulse Resistors," R. L. Davis, Sandia Laboratories, Albuquerque, New Mexico, Report SC-R-65-887, September 1965.

EUT



You get your
results and it's
two weeks too
late to transfer
to Industrial

Lose one year

Math Prof does not
have an accent

Collect 80 marks and
move ahead 3

NURS

Lose
Collect



You forgot what a
woman looks like

Go to Nurses' Pub
Lose 6 inches

Bookstore

Lose \$200



Bell curve

Multiply marks by

$$\int_{-\infty}^0 \frac{1}{\beta \sqrt{\pi}} e^{-\frac{nkT^3}{k\epsilon_0}} \cos \omega t$$

engineering

RULES

ENG S

The Eng. Sci. Game is a game for one, two, or 412.5 players. Opponents must all speak different languages - if you don't know one, make one up.

The object of the game is to go 4 times around the board without losing all your money while collecting 500 marks or more. Players can pass GO a maximum of 4 times (the 5 year course) before collecting 500 marks; otherwise they must drop out of the game.

Use Eng. Sci. die or 2 regular dice.

Start with \$3000 and 0 marks.

GO: First Year: roll die.

If under 75 go to Arts

If 75 to 85 go to Engineering

If 95 or over go to Meds

Second year: roll die:

If odd, stay in game

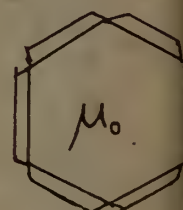
If not, go to Industrial and lose one year
restructure game without GO TO

Third and Fourth year:

Use GO TO or write entire game in APL

EUT: collect 10 marks for each turn spent
at EUT

Roll 10 to 12 to leave



Divis

No
Wa

GO

Lose \$844.50
and your sanity

Lose cheat sheet

Go back 2

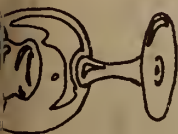
Applied functional
analysis

Go back one year.
Do not collect 35 marks

THE

Roll die
penalt

S' PUB

e night
e nightie

Assignment due

Go back 4 for an
extension. Lose \$25

Bell curve fails

Collect 12.5 marks

COMMON
ROOMNOW PLAYING:
TODAY'S PROBLEM SET

science game

CI DIE

THE SHAFT

1. You have no sense of time - you probably finished last year but didn't realize it. Lose 1 turn to find out.

2. Another woman drops out - lose one move in mourning

3. Chariot in Common Room - Go to department office

84. Your calculator dies - Lose \$100 and 49 marks

6. Win a weekend in Waikiki - Give it to a friend who has time.

j 7. Copy problem set - lose \$10; collect 83 marks

7. You did a problem set yourself - Collect \$76.28; Lose 50 marks

5. ECO281 - ignore this course. Collect 72 marks

9. Ski week - ignore this too

10. Eat at the Annex - lose \$1.50 and your health

√2. Earn money in your spare time - collect \$0.00

Card game

Go back 1 (You didn't really want to go to class anyway)

F! up

Go to Division Office

Learned something today

Lose 2 moves (acute shock). Collect 75 marks

Office

y here
turns

SHAFT

and select
from list.

You're in luck

Go back 3.
Collect 60 marks

You got some sleep

Go back 1
(that'll teach you!)

GO TO EUT



genesis

You're in Eng Sci ...

CHAPTER ONE

In the beginning God created the University and the Annex.

And the University was without form, and remains so even today.

And God said let there be light, and there was quantum field theory.

And God saw the light, yes, Ford does have a better idea.

And God called the light Physics and darkness he called Reality, and the two were forever mutually exclusive.

And God said, Let there be an elite in the midst of the common masses, and let it divide the mediocre from the hopelessly lost.

And God called the elite Engineering Science and God saw that it was good.

And God handed down the 10 academic whips to the chosen department chairman upon a fiery stormy mountain, and the chairman shall forever crack the whips upon his disciples and the privileged followers.

And the morning and evening were the first day.

CHAPTER TWO

And God said, Let us make Eng Sci Students in our image, after our likeness, and let them have domain over the fish in Mech, and over the fowl of Civil, and over the cattle in Electrical, and over the sheep in Industrial, and over all the earth, and over every creeping Artsie that creepeth upon the earth.

And God created other men in his image during a hangover, and decreed that all men are equal, and some more than others.

And that Engineering students are more equal than all other students, and Artsies, too!

And that Engineering undergraduates are more equal than grad students, being that undergrads possess intelligence, humour, vitality, originality and social life.

And that First Year Students are less equal than the rest of Engineering undergrads, for the Frosh are a confused bunch, unsure of future direction, and eternally lost.

And that Eng. Sci. students are more equal, superior, and masters of all other Engineering Undergrads, for the Eng. Sci. men will inherit and command the real world, and the University, too, becoming President, Chairmen of Boards and Deans, as their function in life is to be served by the willing and meek Industrials, Civils, Mechs, etc.

And God saw that it was good, so very pleased that He retired, and left the world to the fate of Engineering Science direction and guidance.

So it is written.

The Passing of Our Friends

During the formulative years of ENG. SCI., our illustrious department chairman shunned SUNBEAM bread which helps build a student body 12 ways. Instead Annex food was substituted, and a magnificent first day class of 210 has been reduced to a feeble 80 by second year.

The following eulogy to our dear departed friends, who left the real world and entered Electrical or Mechanical, (ie., Flots, Duff), was prepared to honour our former comrades.

"Dearly beloved, forasmuch as it hath pleased the Almighty Dean of his great mercy to receive unto himself the soul of our dear brothers departed: we commit their bodies to the depths of hell where they may find peace, booze and braods; earth to earth, ashes to ashes, dust to dust, 4 to 1 Lady Luck 6th race Woodbine; in sure and certain hope of the Resurrection to eternal Engineer, through our saviour, Lady Godiva."

On that fatal day, last Jan. 15, Entropy was reversed for three minutes to honour the passing of our buddies.

(Apologies to King Henry VIII, and the Synod of the Anglican Church)

Eng Sci Oath

CLAUSE 1 (GENERAL)

I do solemnly swear to uphold the true ENG. SCI. tradition of large scale suffering (polar coordinates). Following in the footsteps of our beloved ancestor, NG TSAI, I promise to improperly integrate all lines, surfaces and volumes which happen to revolve around me. I promise to hold my beer following the equation of

$$\text{capacity (gallons)} = \frac{\text{charge } (\$.55)}{\text{potential (48 oz.)}}$$

CLAUSE 2 (DAILY ROUTINES)

I will hand over the answers to my problem sets providing the total revenue (TR) I receive is greater than the total cost (TC) of photocopying

ie., profit = TR - TC

CLAUSE 3 (AIR DYNAMICS)

I promise to construct a paper sirplance to further the study of collision mechanics. I will funnelate artsies, while fully utilizing the properties of aerodynamics and properly gauging the amount of water used in the balloons.

FINALLY I would like to renounce all claims to my sanity, common sense and most of all my bed, to forever take up a humble position at the top of the Engineering pinnacle, superior in my beliefs that I won't last the year.

PSALM 35:2-74

And Behold, there came a jack
And worshipped Him, saying, Engineer, if
thou wilt thou shalt
make me intelligent.
And the Engineer put forth his hand and said,
"Woe be unto
you for you are cursed, for how can I
(omnipotent though I am) instill intelligence
into a vacuum."

Eng Sci Prayer

Go flacidly amid the noise and the AC hum,
And derive what joy you can in knowing that
you are an integral part thereof.
Whenever possible, go off on a tangent.
Remember that no matter how difficult it looks,
it probably is.
Avoid the ASUT, for there reside fools.
Pay heed to those in higher years, they have
survived.
And strive not to laugh at those who would
have
Eng Sci 7T9 on their coats.
Get your REM sleep.
For a good time, differentiate a duck.
Xeroxing is only a nickel.

ENG SCI CREED

Blessed be the bell curve,
For it sits in judgement;
And on the left hand sit the failures,
Have pity on the failures,
For they shall become Mech. Eng.;
And on the right hand sit the genii,
Have pity on the genii
For they shall graduate and have no jobs.
AHH-H-H-H-AH SHIT!

You Know You're in Eng Sci When ...

- you're a male but you check the SAC directory every now and then, just to make sure
- you own a matched pair of briefcases
- you can get by with three hours of sleep a night for weeks, but fall asleep at the slave auction
- you sit at the front of the class so the prof can hear you when you correct him
- you photocopy your aid sheet and sell copies
- you win the intercourse competition with no previous experience
- your paper airplane hits the guy in front of you
- you go to the wrong class but take notes anyway
- you know where every 5 cent copier on campus is located, understand how the IBM 360/165-II works, but aren't sure where babies come from
- you copy someone else's problem set and get a better mark
- you like the food at the Annex
- you finally finish an assignment before it's due - and lose it
- you learn Swahili in order to understand your tutor.
- you hit the average professor twice in the average lecture with a better-than-average paper airplane, but can't understand why the prof smiles so much when he announces an 18 per cent class average
- you invent the Xerox pen
- you find out what 's' is in a Laplace transform
- you start studying in November - for finals
- you ask an intelligent question on a Labatt's tour
- you put your real lab results in the writeup
- you understand all the professor's jokes - and laugh
- you don't know what the original for a problem set looks like
- you spend more Friday nights with a keypunch than with your girlfriend
- you talk quietly to your calculator when you fail another test.

(parts of this article were lifted from The Plumline, McMaster)



THAT HEADSHOP FROM THE MARKET IS BACK (LOUD MUSIC AND ALL) ON BEDFORD, WITH MORE VARIETY

5 per cent discount with this ad

A QUIZ

THE PEANUT GALLERY HAS A SALE ON

- a) zucchini and summer squash
- b) imported jerseys & pullovers
- c) pillows, pipes & clips
- d) French jewelry
- e) all or none of the above

The Peanut Gallery is

- a) in a nutshell
- b) where that other place was
- b) at Bloor & Bedford across from Bedford subway
- d) just another store with one of a kind pipes & papers

People who read this ad

- a) have finished in the john but don't want to get up
- b) don't
- c) have more dates & their acne is clearing up
- d) know when they see a bargain



The Peanut Gallery

244 Bloor St. W.
on Bedford
(behind Mr. Submarine)
925-8920

**POTTED
PLANTS
PIPES
PINS**

**POSTERS
PAPERS
QUILTED PILLOWS
PRECIOUS TOPS**

**PRE COLUMBIAN ART — POTTED
MASTERPIECES IN PARAPHERNALIA**

EXTRA

We also have scarves, High Times, comix, plants, spoons, candles (4 varieties), paintings, batik greeting cards, 50 varieties of papers, zodiac stationary, and all sorts of one of a kind goodies.

5 per cent discount with this ad

xenobiology

Man of Steel - Woman of Kleenex Why Superman Can't

by Larry Niven

Reprinted from *All the Myrian Ways*
Ballantine Books - 1971)

At the ripe old age of thirty-one (Superman first appeared in *Action Comics*, June, 1938), Kal-El (alias Superman, alias Clark Kent) is still unmarried. Almost certainly he is still a virgin. This is a serious matter. The species itself is in danger!

An unwed Superman is a mobile Superman. Thus it has been alleged that those who chronicle the Man of Steel's adventures are responsible for his condition. But the cartoonists are not to blame.

Nor is Superman handicapped by psychological problems.

Granted that the poor oaf is not entirely sane. How could he be? He is an orphan, a refugee, and an alien. His homeland no longer exists in any form, save for gigatons upon gigatons of dangerous, prettily colored rocks.

As a child and young adult, Kal-El must have been hard put to find an adequate father-figure. What human could control his antisocial behavior? What human would dare try to punish him? His actual, highly social behavior during this period indicates an inhuman self-restraint.

What wonder if Superman drifted gradually into schizophrenia? Torn between his human and kryptonian identities rigidly separate. A psychotic desperation is evident in his defense of his "secret identity."

But Superman's sex problems are strictly physiological, and quite real.

The purpose of this article is to point out some medical drawbacks to being a Kryptonian among human beings, and to suggest possible solutions. The Kryptonian humanoid must not be allowed to go the way of the pterodactyl and the passenger pigeon.

What turns on a Kryptonian?

Superman is an alien, an extraterrestrial. His humanoid frame is doubtless the result of parallel evolution, as the marsupials of Australia resemble their mammalian counterparts. A specific niche in the ecology calls for a certain shape, a certain size, certain capabilities, certain eating habits.

Be not deceived by appearances. Superman is no relative to homo sapiens.

What arouses Kal-El's mating urge? Did kryptonian women carry some subtle mating cue at appropriate times of the year? Whatever it is, Lois Lane probably doesn't have it. We may speculate that she smells wrong, less like a kryptonian woman than like a terrestrial monkey. A mating between Superman and Lois Lane would feel like sodomy - and would be, of course, by church and common law.

Assume a mating between Superman and human woman, designated LL for convenience.

Either Superman has gone completely schizo and believes himself to be Clark Kent; or he knows what he's doing, but no longer gives a damn. Thirty-one years is a long time. For Superman it has been even longer. He has X-ray vision; he knows just what he's missing. (One should not think of Superman as a Peeping Tom. A biological ability must be used. As a child Superman may never have known that things had surfaces, until he learned to suppress his X-ray vision. If millions of people tend shamelessly to ear clothing with no lead in the weave, that is hardly Superman's fault.)

The problem is this. Electroencephalograms taken of men and women during sexual intercourse show that orgasm resembles "a kind of pleasurable epileptic attack." One loses control over one's muscles.

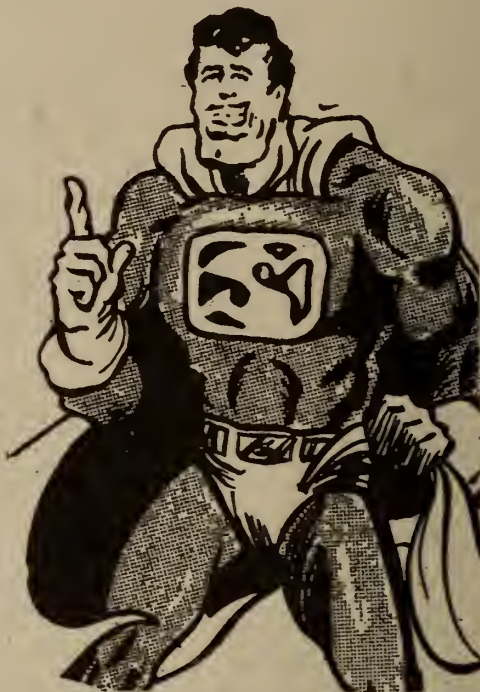
Superman has been known to leave his fingerprints in steel and in hardened concrete, accidentally. What would he do to the woman in his arms during what amounts to an epileptic fit?

Consider the driving urge between a man and a woman, the monomaniacal urge to achieve greater and greater penetration. Remember also that we are dealing with kryptonian muscles.

Superman would literally crush LL's body in his arms, while simultaneously ripping her open from crotch to sternum, gutting her like a trout.

Lastly, he'd blow off the top of her head.

Ejaculation of semen is entirely involuntary in the human male, and in all other forms of terrestrial life. It would be unreasonable to assume otherwise for a kryptonian. But with kryptonian muscles behind it, Kal-El's semen would emerge with the muzzle velocity of a machine gun bullet. (One can imagine that the Kent home in



Smallville was riddled with holes during Superboy's puberty. And why did Lana Lang never notice that?

In view of the foregoing, normal sex is impossible between LL and Superman.

Artificial insemination may give us better results.

First we must collect the semen. The globules will emerge at transsonic speeds. Superman must first ejaculate, then fly frantically after the stuff to catch it in a test tube.

We assume that he is on the Moon, both for privacy and to prevent the semen from exploding into vapor on hitting air at such speeds.

He can catch the semen, of course, before it evaporates in vacuum. He's faster than a speeding bullet.

But can he keep it?

All known forms of kryptonian life have superpowers. The same must hold true for living kryptonian sperm. We may reasonably assume that kryptonian sperm are vulnerable only to starvation and to green kryptonite; that they can travel with equal ease through water, air, vacuum, glass, brick, boiling steel, solid steel, liquid helium or the core of a star; and that they are capable of translight velocities.

What kind of a test tube will hold such beasts?

Kryptonian sperm and their unusual powers will give us further trouble. For

the moment we will assume (because we must) that they tend to stay in the seminal fluid, which tends to stay in a simple glass tube. Thus Superman and LL can perform artificial insemination.

At least there will be another generation of kryptonians.

Or will there?

A ripened but unfertilized egg leaves LL's ovary, begins its voyage down her Fallopian tube.

Some time later, tens of millions of sperm, released from a test tube, begin their voyage up LL's Fallopian tube.

The magic moment approaches...

Can human breed with kryptonian? Do we even use the same genetic code? On the face of it, LL could more easily breed with an ear of corn than with Kal-El. But coincidence does happen. If the genes match...

One sperm arrives before the others. It penetrates the egg, forms a lump on its surface. The cell wall now thickens to prevent other sperm from entering. Within the now-fertilized egg, changes take place...

And ten million kryptonian sperm arrive slightly late.

Were they human sperm, they would be out of luck. But these tiny blind things are more powerful than a locomotive. A thickened cell wall won't stop them. They will all enter the egg, obliterating it entirely in an orgy of microscopic gang rape. So much for artificial insemination.

But LL's problems are just beginning.

Within her body there are still tens of millions of frustrated kryptonian sperm. The single egg is now too diffuse to be a target. The sperm scatter.

They scatter without regard to what is in their path. They leave curved channels, microscopically small. Presently all will have found their way to the open air.

That leaves LL with several million microscopic perforations all leading deep into her abdomen. Most of the channels will intersect one or more loops of intestine.

Peritonitis is inevitable. LL becomes desperately ill.

Meanwhile, tens of millions of sperm swarm in the air over Metropolis.

This is more serious than it looks.

Consider: these sperm are virtually indestructible. Within days or weeks they will die for lack of nourishment. Meanwhile they cannot be affected by heat, cold, vacuum, toxins, or anything short of green kryptonite. (And other forms of kryptonite. For instance, there are chunks of red kryptonite that make giants of kryptonians. Imagine ten

million earthworm-sized spermatozoa swarming over a Metropolis beach, diving to fertilize the beach balls...but I digress.) There they are, miniscule but dangerous; for each has supernormal powers.

Metropolis is shaken by tiny sonic booms, Wormholes, charred by meteoric heat, sprout magically in all kinds of things: plate glass, masonry, antique ceramics, electric mixers, wood, household pets, and citizens. Some of the sperm will crack lightspeed. The Metropolis night comes alive with a network of narrow, eerie blue lines of Cherenkov radiation.

And women whom Superman has never met find themselves in a delicate condition.

Consider: LL won't get pregnant because there were too many of the blind mindless beasts. But whenever one sperm approaches an unfertilized human egg in its panic light, it will attack.

How close is close enough? A few centimeters? Are sperm attracted by chemical cues? It seems likely. Metropolis had a population of millions; and a kryptonian sperm could travel a long and crooked path, billions of miles, before it gives up and dies.

Several thousand blessed events seem not unlikely. (If the pubescent Superboy plays with himself, we have the same problem over Smallville.)

Several thousand lawsuits would follow. Not that Superman can't afford to pay. There's a trick where you squeeze a lump of coal into its allotropic diamond form...

The above analysis gives us part of the answer. In our experiment in artificial insemination, we must use a single sperm. This presents no difficulty. Superman may use his microscopic vision and a pair of tiny tweezers to pluck a sperm from the swarm.

In its eagerness the single sperm may crash through LL's abdomen at transsonic speeds, wreaking havoc. Is there any way to slow it down?

There is. We can expose it to gold kryptonite.

Gold kryptonite, we remember, robs a kryptonian of all of his supernormal powers, permanently. Were we to expose Superman himself to gold kryptonite, we would solve all his sex problems, but he would be Clark Kent forever. We may regard this solution as somewhat drastic.

But we can expose the test tube of seminal fluid to gold kryptonite, then use standard techniques for artificial insemination.

By any of these methods we can get LL pregnant, without killing her. Are we out of the woods yet?

Though exposed to gold kryptonite, the sperm still carries kryptonian genes. If these are recessive, then LL carries a developing human foetus. There will be no more Supermen; but at least we need not worry about the mother's health.

But if some or all of the kryptonian genes are dominant...

Can the infant use his X-ray vision before birth? After all, with such a power he can probably see through his own closed eyelids. That would leave LL sterile. If the kid starts using heat vision, things get even worse.

But when he starts to kick, it's all over. He will kick his way out into the open air, killing himself and his mother.

Is there a solution?

There are several. Each has its drawbacks.

We can make LL wear a kryptonite belt around her waist. But too little kryptonite may allow the child to damage her, while too much may damage or kill the child. Intermediate amounts may do both! And there is no safe way to experiment.

A better solution is to find a host-mother.

We have not yet considered the existence of Supergirl. (She can't mate with Superman because she's his first cousin. And only a cad would suggest differently.) She could carry the child without harm. But Supergirl has a secret identity, and her secret identity is no more married than Supergirl herself. If she turned up pregnant, she would be thrown out of school.

A better solution may be to implant the growing foetus in Superman himself. There are places in a man's abdomen where a foetus could draw adequate nourishment, growing as a parasite, and where it would not cause undue harm to surrounding organs. Presumably Clark Kent can take a leave of absence more easily than Supergirl's schoolgirl alter ego.

When the time comes, the child would be removed by Caesarian section. It would have to be removed early, but there would be no problem with incubators as long as it was fed. I leave the problem of cutting through Superman's invulnerable skin, as an exercise for the alert reader.

The mind boggles at the image of a pregnant Superman cruising the skies of Metropolis. Batman would refuse to be seen with him; strange new jokes would circulate the prisons...and the race of Krypton would be safe at last.

ENG SOC CLIQUE?

Bullshit, says vice-president Rob West. And anybody who disagrees with me will get the custard beat out of him by me and my fourth year friends.

Be that as it may, the Engineering Society is now welcoming nominations for executive positions on the Society, on the Engineering Athletic Association, and for five (5) S.A.C. representatives. These positions are as follows.

1	President	- Eng. Soc. - Class of 7T7
1	Vice-President Administrative	- Eng. Soc. - Class of 7T7, 7T8
1	Vice-President Activities	- Eng. Soc. - Class of 7T8
1	President	- Eng. Soc. - Class of 7T8
1	President	- E.A.A. - Class of 7T7
1	Secretary-Treasurer	- E.A.A. - Class of 7T8
5	S.A.C. Engineering Reps	- All years.

Anybody wishing to run for the above positions, who are registered as undergraduate students in the Faculty of Applied Science and Engineering and who will graduate in the respective years noted above, may do so by going to the Engineering Stores. Once there, obtain nomination forms from our secretary and holy advisor, Janet Zukovs. With the forms, there will be included the rules which all candidates must follow. Basically, each candidate must obtain twenty-five (25) signatures supporting his nomination as well as posting a \$5.00 bond to show seriousness of intent. Election expenses cannot exceed \$15.00, and all expenses incurred by all candidates will be reimbursed by the society, providing receipts are supplied.

The nominations will close at 2:00 P.M. on Friday February 27. The campaigning will take place from Monday March 1 to Wednesday March 3 with elections being held on Thursday March 4 and Friday March 5.

Once you are running, we would ask that you provide a 1)-200 word synopsis of your background, qualifications and plans for the future, along with a small wallet-sized photograph of yourself.

Simultaneously with the presidential elections, class representatives for the faculty council and the engineering society will be elected for those students going into third or fourth year.

We, who have been through the 4 Year Academic War (some of us even have survived a 7 Year War) look back on our years in university with mixed feelings. Did we make the most of our time here? Or did we just pass in, through and out without changing ourselves, just as shit flows through a New Democrat's ears. Who does all the work or, more to the point, who spends all the money? Thirty grand is nothing to fart on. It's your money and it is always spent, sometimes too soon. If you don't speak up, we will just drink it up. Pity the 1500 or so engineering students who, every year, don't give two yarbles what is done with their money. It just means the other 900 have twice as much pesos to waste.

What does Eng. Soc. do? Support the Toike. Put out a yearbook. Send 10 people on conferences. Put on social affairs. Represent the students as a whole to the faculty. Put out tons of information (calendars, handbooks, Tiny Toikes).

Is this enough? Should there be more or should there be different events or uses of our money? Why aren't there more guest lecturers, seminars, smokers, etc? Do you care? If you do, For FUCK SAKE'S, SAY SOMETHING. Use a little common gumption and initiative, foresight and drive. Help out. Without your help nothing has or will be accomplished. For three years in a row now, a top executive will not be able to graduate when he originally planned because he over-extended himself in the society. If he didn't do it, no one would.

This brings us around to the point (finally). We have been approached by students in lower years who have complained of the cliquishness of the Engineering Society. They feel the predominantly 4th year executive intimidates and ultimately stidles any initiative from lower year students. Although this view is exaggerated, it is not without foundation. Very often ideas for capers, new events and programs have stopped at the idea stage simply because some 4th year student said I don't think it will work because we didn't do it in the good old days! As a result, the only kind of so-called SKULE SPIRIT being generated these days is courtesy of the irrepressable L.G.M.B., which will undoubtedly survive us all. Anybody remember the S.P.S. Coarse. Or Blinded Dog. More to the point, does anyone care.

DEAR PENCIL-PAL,
- How Do You Go To
SCHOOL? I RIDE IN A
SCHOOL BUS.



I Go To a BIG SCHOOL,
ENGINEERING SCIENCE.



THEY TEACH US AERODYNAMICS,
FLUID MECHANICS, DIGITAL
SYSTEMS, HYDROMETALLURGY.



WHEN I GRADUATE I
WOULD LIKE TO DRIVE
A SCHOOL
BUS.



S.A.C. and Richard Flohil present

Right on your campus, right in your home town, right in your face.

THE NATIONAL LAMPOON SHOW

Convocation Hall

Tuesday Feb. 10

One Show Only 7:30 p.m.

WARNING: This show has strong political and sexual references. If you're uptight about references to relations between the sexes, or feel that religion, earthy language, and music and lyrics expressing dubious moral activities should not be presented on stage, may we suggest a dandy Walt Disney movie up in Willowdale. **SECOND WARNING:** A quote from the New York Times: "The National Lampoon Show is raunchy, disgusting, irreverent, and highly amusing." It also sells out fast.

Advance tickets \$4.50 at S.A.C. office (\$6.00 at showtime)

dementia

IT'S ANOTHER EVENING OF LABORIOUS
TOIL AT THE BOOKS AS ENN SIGH,



DESPITE THE FACT THAT HE IS A
SUPERB ATHLETE AND AN OUTSTANDING
SCHOLAR, THERE IS AN UNBUSINESS ABOUT
HIM. THERE IS SOMETHING MISSING IN HIS
LIFE AT COLLEGE...



EXCUSE ME FOR INTERRUPTING
BUT I COULDN'T ^{HELP} NOTICING
THROUGH YOUR WINDOW THAT
YOU'RE STUDYING ALONE



SUDDENLY HE
O REMEMBERS



The People's Republic of Ng Sai

by Gete Palko

Since arriving in the People's Republic of Ng Sai, I have been ably escorted by Ting K'an; a jolly fellow with straight, black hair. Today we visited a lecture on Applied Functional Analysis. As in customary we arrived ten minutes early. The classroom was quite full, and the students were happily discussing the material covered in the last lecture. Several of them were grouped around an open textbook, discussing the beauty of the Hahn-Banach Theorem. Others were reviewing their notes, underlining heading in red and relabelling their carefully drawn diagrams.

Right on time the professor walked in, carrying a red book, a black book and a stack of papers. Everyone lept to his feet, Ting K'an and myself included, and heartily wished the instructor a good morning. When we sat down, there was dead silence as we eagerly awaited the day's lesson. However, I was hardly prepared for what happened next. The professor, Mr. Tsuoku, turned, walked to the blackboard, picked up a piece of chalk, paused a second, then wrote the word "adjoints" at the top of the left-hand board. I could feel excitement running through the classroom like a tiger running through the forest. This was the moment everyone had been waiting for. How long it had been since yesterday's lecture. But it had been worth the wait, for today Mr. Tsuoku would reveal in its anticipation.

With each word, Mr. Tsuoku spoke, with each inscription, the thrill rose. I watched the students glance at one another with smiles of glee. Armed with the adjoint, they could finally vanquish the revisionist forces of chaos which had plagued the structure of their lives and the lives of those they loved. This moment would leave a long lasting trace. The cause of progress, like a hamster, had been served.

With a beneficent smile on his face, the professor presented definitions, lemmas, theorems and proofs for the students to meditate on. Ting K'an was entranced by the deep crystalline clarity that emerged concept by concept. But the biggest moment of the lecture came at the end.

For almost two days now the students had been miserable. Boredom had set in. They had moped around the library with no direction and no drive. But Mr. Tsuoku had a surprise for them. As soon as he made a motion toward the stack of papers on his desk, the room was

charged with expectation. A new problem set! He divided the stack in half and have one half to the left side of the class and the other to the right. Quickly they were passed back and as Ting K'an and I left, the room was bustling with dittoed euphoria.

I bid farewell to my jolly guide and set the warp factor to 9. I was sorry to leave Ng Sai but I knew human beings should gravitate to the most erogenous regions of the universe.

Requiem for the Masses

by Jim Kennedy

A policy decision was released from the Faculty office last week stating that eight Engineering Science options would be dropped from the curriculum next year due to "falling enrollment". In a meeting of all second year students in this course, the group was asked to comment upon this, and he replied that it didn't really matter to him. The student was then questioned on the state of affairs leading up to the present situation.

"Well, it's a natural result of the underlying principal of uncertainty. As the acceptance criteria became more exacting, the system achieved a limiting, quantum state wherein the exactitude of the principal variable resulted in a large order increase in the uncertainty of the position of the collective student body within the faculty, by reference to the fact that their mutual product must be greater than the Board's constant. We reached a point where the uncertainty was greater than the average student's achievement potential, and a scattering effect was observed."

The next question concerned the areas in which the ex-Engineering Science students would enter.

"Classically, it would be thought that regardless of situation, the body would remain within the faculty. It has been seen recently however, that this is not necessarily the case, and, in fact, there is about a sixteen percent chance that a student would leave hallowed ground entirely and enter the null space of another course, or, in a few cases, the formerly forbidden region of unemployment. In some cases, there are several jumps involved, but, as I previously implied, approximately eight-

four percent remain within the accepted deviation from the norm."

This state of affairs could be of some concern to first year students. We inquired about the prospects for change and the proper course of action for future students.

"A number of ideas have been presented in the past in the way of preventative action; the most prominent which comes to mind being the Pickett Procrastination Principal, whereby significant results were achieved. There are, however, certain parasitic principles nullifying the effects of these ideas; concepts such as the Law of Diminishing Returns, a strong psychological factor, as is the tendency towards greater entropy, a phenomenon quite prevalent during Chemistry tutorials last year. It seems quite clear that there is a basic quantum structure to be dealt with, one which is quite complex in nature, requiring the integration of our skills in order to properly solve it. In the meantime, we can do little else but differentiate between transient and global factors to form the basis for future research. With the boundary conditions as they appear now, about all I can postulate as an effective preventative course for future students is to buy their jacket with Velcro lettering."

NEW (HARD) CORE COURSE

SEX 369Y (YNQT?) MANIPULATION THEORY — 100 69 kg

I-5, II-5, III-5, IV-5

Prerequisite — Puberty.

This all new extra-disciplinary course has been added to the Engineering Science curriculum to satisfy a need which is sadly lacking in this division. It incorporates, as is customary with Eng. Sci, the best of many disciplines, no one being of sufficient quality by itself. Of course the basic scheme is structured around the mathematics department, which is offering the following:

analyzing areas under curves, saddle points, forcing functions, concave and convex surfaces and intersexions, two and three variable analysis, group theory, non-Cauchy interactions, Hamiltonians and the n-body problem, cylindrical polar coordinates, rabbit and Lagrangian multipliers, best fit hypothesis, de-virgince, propositional calculus.

In addition, the Physics department is giving the listed lectures:

simple and complex harmonic motion, resonant cavities, periodic discontinuation, right-handed screwing rule, entering classically forbidden regions.

The Electricity department is offering a half year course:

self induction, steady state oscillations, AC/DC cirkweets, optimization of frequency of periods, mutual and self-excitation, left-handed screwing rule, resistance and compliance (compliance is a new N variable — measured in semens).

The other half is taken up by the department of Matter and Material Science with these seminars:

Reynolds numbers and Reynolds wrap, linear versus turbulent flow, rigidity, expansion and contraction.

In order to provide some hands-on experience, the Chemistry department is giving the following (wet) laboratories: heats of reactions, spanish fly catalysis, penetration, removal of boundary layers, homo versus heterogenous reactions, holding time in a tubular reactor, explosions, thin-walled filters (osmosis is real), feasibility and completion of reactions as a function of activation energies, fluidized bed reactors and avoiding the wet spot, chain (and whip) reactions, frictional hot spots, chemical bondage.

If it is hoped that the students will get a good feel of this subject, that they will be able to get into the course.

Introduction to Physics I FIZ100F) has been added to the curriculum and replaces Elements of Physics I (PHY180F).

FIZ100F INTRODUCTION TO PHYSICS

I-V (compulsory)

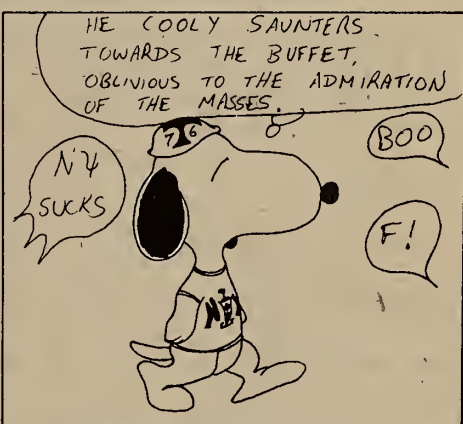
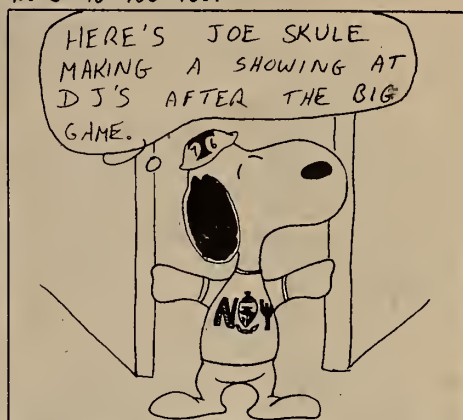
Non-science and the pseudotransmogrificationalific egocentri-fied reorientational proclivities inherently intracorporated in expertistical cerebroidintellectualised redeploymentation with special reference to quasi-notional fashionistic normativity, the indoctrinationalistic methodological modalities and scalar socio-economic promulgationary improvementalisationalism predelineated positotaxically toward individualistified mass-acceptance gratificationalistisc securipermanentalisationalary professionalism.

Dr. Verkyur Balzov, M.A.D. (Trawna)

B.O. (Hogtown)

D.I.C.K. (Don't you know by now)

NUTS TO YOU TOO:



toiketronics

Eng Sci Announces Amazing Spazistor

This week Eng. Sci. student S. Spaz (S for super) announced the development of a new solid state device, which promises to revolutionize today's electronics scene. This transistor is to be named, because of its characteristics, the spazistor.

The spazistor will be available in three different versions: bipolar spazistor (B.S.), field effect spazistor (F.E.S.), and, employing the very latest in H.O.C.O.S. — P.O.C.O.S.M.O.S. technology, the insulated gate F.E.S., (FIGS). Three power sizes are also planned. Specifications are shown below.

Specifications:

VLCBO-2-4(p-p)*

Frequency at which spazistor burns out - F!

High Current Capabilities - I II

Power Ranges:	Number	Rating
	5N123	Too much
	5N456	Not enough
	7T7N	What's that burning sensation?

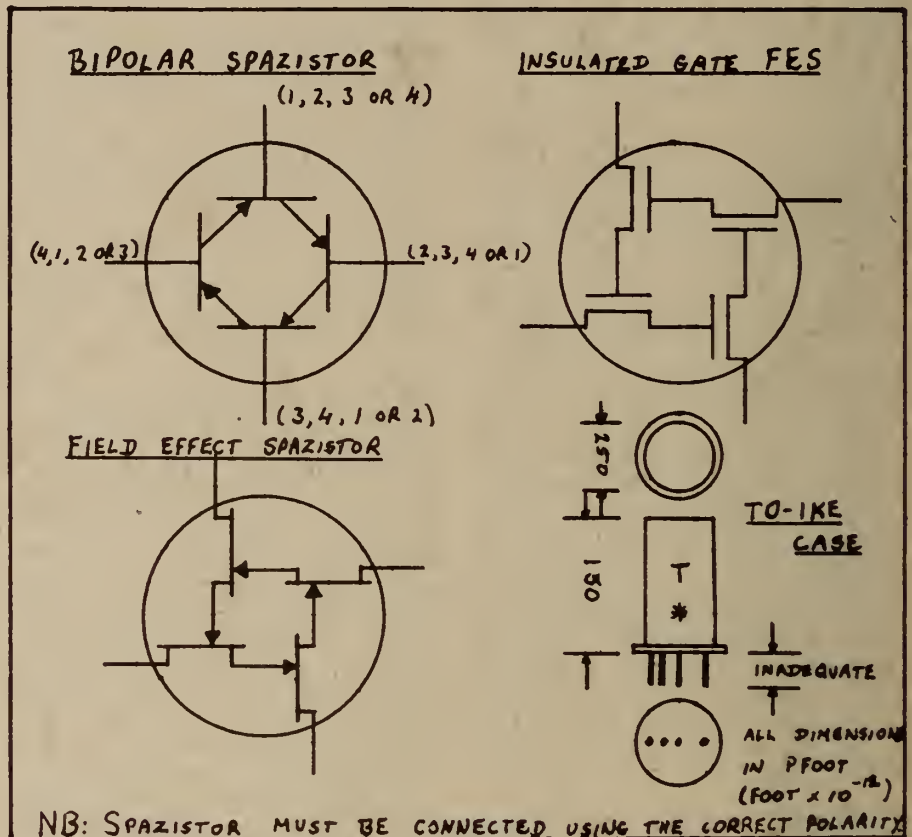
* p-p - piss poor

As you will notice the spazistor has only inputs. This eliminates all the messy output matching calculations inherent in normal transistors, saving hours for the designer.

One new field in which the spazistor is particularly useful is that of extra outputs. Have you ever built something and worried what that extra wire was doing dangling from the circuit? Well here's the answer ... simply connect that extra wire to a spazistor input. In fact, one spazistor will do away with up to four of these nuisances. So, any spare outputs a spazistor will take care of them. Any signals you don't want, feed them into a spazistor and they are gone for good.

Future Prospects

"The future of the spazistor looks very bright," says Spaz. "We have observed in several physics



experiments that signals go into the spazistor, but they don't come out. Therefore they must still be inside. If we can only find some way of getting these signals out again we could revolutionize the record industry, terrify tape, and crucify cassette competitors."

Designs are already on the drawing board for a spaz corder, spazograph, not to mention spaz equipped T.V. (to be called spaz vision in Canada and telespaz in the U.S.) Even clocks will have spazistors ("Spazticks").

"We are planning to sell 45 r.p.m. spazistors for spazographs, and later introduce L.P.s" says Spaz, who has just created a wholly Canadian owned ("Wholly Canadian owned, Batman") spazistor recording company. True Spaz has already signed such future greats as Jimi Hendrix, Jim Croche and Duane Allman, plus Brian Jones.

Concludes Spaz, "It all depends whether we will be able to complete development of the spazistor during

this year's physics labs. At present progress is being held up while my demo figures out how to switch on the resistors I want to use in my test circuit."

Uses for Dead Spazistors

1) If spazistor burns out and shorts it becomes a solid state wire. Just solder two leads of a shorted spazistor to two points in the circuit you want joined, and instantly they are connected. Never before has a wire been available in a TO-IKE case. Power capability of the wire can be boosted by adding a heat sink to the case.

2) If spazistor burns out and opens, it becomes a solid state space. Just solder the leads to two points in the circuit you do not want joined and instantly they are disconnected. Never before has a space been available in a TO-IKE case.

Readers are invited to send in their favorite applications.



DJ'S ...

Bring a friend

**Special... a Beef Buffet for \$2.50
and featuring , on**

Wednesday Nights,
the famous

Climax Jazz Band

DJ'S Tavern , Hydro Place , 595-0700.

system status

Toike Oike Policy

by Eric Hartwell

Do you care about the Toike Oike? Why does the Toike exist? What is its purpose?

In response to continual complaints about the Toike's content (over the past $n + 1$ years), the Engineering Society and the Faculty office have set up a "Toike Policy Board" to set down on paper once and for all WHAT the Toike is or should be.

The Toike is "devoted to the interests of the undergraduates of the Faculty of Applied Science and Engineering". In an attempt to find out what these interests are, and whether the Toike has indeed been serving them, a survey was distributed among the engineering students. Preliminary results are as follows:

QUESTION (1393 surveys)	YES (per cent)	NO
1. Do you enjoy reading the Toike?	91	9
2. Are you satisfied with the Toike in its present form?	64	36
3. Are you satisfied with the image that the Toike portrays of you as an Engineer?	65	35
Would you like to see a more serious image?	36	64
Should there be more emphasis on information:	60	40
a) engineering technical matters	40	60
b) engineering society activities such as sports, social events	73	27
6. Do you think that a major part of the Toike function should be entertainment?	91	9
7. Do you feel that the quality of the writing should be improved?	60	40
8. Would you be willing to write good quality articles for the Toike?	35	65
9. Do you have any suggestions for the Toike publishing policy?	37	63

At the last Toike Policy Committee meeting on January 26, a list of objectives for the Toike was established:

- 1) To fill a need for engineering undergraduates not met by other publications.
- 2) To project an image of engineering students as light-hearted, involved and intelligent.
- 3) To provide entertainment.
- 4) To provide information.
- 5) To be financially self-sustaining.

At the next meeting on February 9th, the Toike Policy will be established with these objectives in mind and using the suggestions on the survey.

Kiwanis Band

by Burpee Jim

For the first time since 1967 the L.G.M.B. will once again win the Kiwanis Music Festival. (Who knows what we're going to do with it once we have it, though.) The band has held two rehearsals, with one more planned before the competition which will be on Friday, Feb. 10, 8:00 P.M., at Lawrence Park C.I. From now on we'll have to be referred to as the triple prize winning Lady Godiva Memorial (Marching) Band. Also, don't forget to see us in Skule Nite. We have a brand new stage act this year. Be sure to come and see us steal the show once again.

The Pig's Tale

by George Crawford

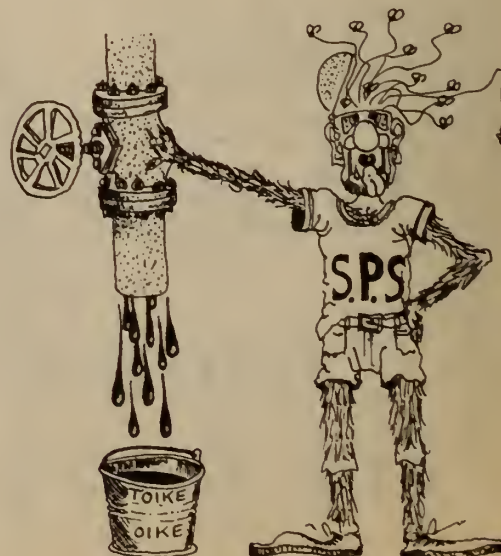
There has been a lot of talk lately about the quality of the Toike. A lot of people feel the articles should be more civil. This column will indeed be a Civil article. Of special interest to Civil Clubbers.

Writing this may cause my expulsion from the U of T Apathy Club, but with 26,000 other members I'll hardly be missed.

It's been a rough year for Civil. We didn't win the Intercourse competition. We didn't win the Miss Cannonball either. We didn't even come close in the Chariot Race - our chariot was destroyed by some madmen with rock hammers. In their infinite wisdom, the Civil Club has come up with some certain victories for us. A basketball tourney Feb. 21 and a hockey tourney Feb. 20. It's a Civil only class tourney. See your rep for details.

Another date to remember is the Civil Dinner on March 23. It's a buffet at the Four Seasons. See your class rep for tickets and to help with the entertainment.

Sports news! Team Tequila once again was victorious, beating Elec 7T6 7-2. That game will be played tomorrow at noon. Be there!





Jabberwalk

Guten morgen, meine damned herrin'. Spearchucker's back once again to strike literary terror in the massyve hart of central controll in the land of ut. The long lluullll is over and well worth the weight. "Of course (Stat & Mech II): too years of piece!" quoth the sniveling Coward in the back Rowe. But we know/no better, don't we groups, groupers, groupors, groupees, & groupies! Only fare honour held these pearls from betoiked pages. True Fanz will recall (and often does) the previously final Spearchucking column wherein it itself was declared to be freestanding & tamper-proof. Since it was tampered, the editor was pampered, and silence was all that remained...that remained; here's to the dogs of Toledo Ohio: Ladies we bid you goodnight.

Which brings us to the Toike. If you're still reading, **anything** will bring you to the Toike. Be that as it wasn't, ed heartwell and brave friends are suffering the annual (oftimes fortnightly) Toike Oike Identity Crisis. For it seems that in the land of sps (the p is silent) each year, the mad rush of new beginnings collapse in the weighty air of November. Proud hearts turn to hopeless musing: what is the meaning of Skule?

Just to break the gloom, the Dean grumbles.
And the world doesn't care.

Except for the Toike ed, with his passion to be liked and his work admired, who notices: someone out there is listening! And he has opinions!

Herein lies the fatal flaw. For you, dear reeders, thousands strong, **do** listen. Far more than the Dean and his sewing circle. And you **have** opinions. Without secretaries to write your letters, you merely rush madly out on grim Thursday mornings to grab a precious copy.

And you love us.

For the Toike is not Skule's. Certainly not the Dean's. Not even is it uniquely of ut. The Toike is a voice in the world, Louder than most and more clever than many, it is yet just what it is. A uniquely deomcratic reflection of its community. As such its form is not subject to indiv'dual tampering short of utter toikicide.

The Toike is what it is, and should be great at what it does. Cleverer, wittier, more satirical, yes! less crude, for crudity is a transparent mask for ignorance, more proudly produced, and more grandly presented. Greater at what it is and must be.

The Toike is our jester, our fool. Those who would stifle it have reason. Those who are nervous have cause. But the king who cuts off his fool, cuts out his heart.

Let us be what we are. Let us speak what we would be. But let none of us be small.

jocktalk

S-POINT FORMS FOR FREE AWARDS!

S-Points (athletic points) are available at the Engineering Athletic Stores in the Annex from now until Thursday, February 19. To be eligible, your form must be completed and submitted by Friday February 20 (1:30 pm). For more information, ask in the stores. Awards will be presented at the annual S-Dance (see ad in the T*ike). The system of points follows:

S-POINT AWARDS

AWARDS:

I Athletic "S" Award ... 15 pts.

II Bronze "S" Award ... 40 pts. (4th yr. only)

III Championship Teams ... pewter stein

IV Individual Awards;

a) Record set or 3 wins/meet ... pewter stein

b) One or two wins/meet ... pen set/medallion

V Four awards to the outstanding athlete in each year. To be selected by the E.A.A. as described in its' constitution.

VI The class with the highest number of S-points per capita receives the E.A.A. Class Trophy.

NOTE: In awards I-IV no athlete may be awarded more than one stein, pen set or medallion per sport in any one year.

Teams are divided into the following classes:

DIVISION A: (Team Sports)

CLASS I: the team designated as being the "first" team in any team sport.

Sr. Basketball

Rugger I

Squash I

Sr. Hockey

Waterpolo I

Lacrosse I

Sr. Soccer

Volleyball I

Football

Class II: the team designated as being the "second" team in any team sport listed in Class I.

- any other Engineering team playing at the Interfaculty level ie any team designated as a "third" team.

CLASS III: teams which play in the Touch Football League or the Intermediate League for basketball and hockey or any other Intermediate competition.

S-POINT TABLE The points will be awarded as follows:

	CLASS I	CLASS II	CLASS III
Participation (1)	5	4	2
Playoff Team (2)	6	5	3
Finalist Team (3)	7	6	4
Championship Team	9	8	5

(1) 80% of games

(2) A team qualifying for league playoffs and having won at least 50% of it's season's games.

(3) A team losing in the final round of competition.

WOMEN'S SPORTS - all women's team sports shall be **CLASS II Teams** until such time as their playing schedules and competition for places on a team becomes comparable to that in men's sports. To be eligible for Participation points the woman must have attended 75% of the required attendance time (games and practices).

DIVISION B (Individual Sports)

Track and Field, Golf, Swimming, Tennis, Skiing, Cross Country or any other tournament type sport.

1) Participation in any of the above ... 1 pt.

2) For track, swimming, skiing, (including relays)

1st ... 4 pts.

2nd ... 3 pts.

3rd ... 2 pts.

3) For golf and cross-country

1st or 2nd ... 8 pts.

3rd, 4th, 5th ... 6 pts.

6th, 7th, 8th ... 4 pts.

Singles Tennis

Champion ... 8 points

Finalist ... 6 points

Semi-finalist ... 4 points

Quarter-finalist ... 2 points

Doubles Tennis

Champions ... 4 points

Finalists ... 3 points

Semi-finalists ... 2 points

Note: a) where points are earned for placing, the points for participation are forfeited.

b) if a team championship is awarded in any Division B sport, every member of the team shall receive 2 points.

VARSITY TEAMS

Winners of a Varsity Intercollegiate Colour (Men's First "T") or a Women's Intercollegiate "T" shall be eligible to receive 10 points.

CENTENNIAL TOURNAMENTS:

Anyone participating in all the class tournaments of any one year shall be eligible to receive 1 point.

MANAGERS & COACHES

Managers & Coaches of intercollegiate Teams ... 3 pts.

Managers & Coaches of Interfaculty Teams ... 2 pts.

Managers & Coaches of Intermediate Teams ... 1 pt.

A maximum of 10 points per year may be earned in any one sport plus the managers and coaches award for that sport if applicable.

Winners So Far!

As of the publishing date of this literary masterpiece, the following individuals and teams have won awards:

MVP	soccer	John Cristopolous
MVP	lacrosse	Richard Kurczyk
MVP	football	Jim Reininger
MVP	rugger	Jay Reidy
MVP	track and field	Walter Fedunchuk
1974 - 1975	Jr. Water Polo	- finalists
1974 - 1975	Jr. Hockey	- finalists
1974 - 1975	Sr. Basketball	finalists
1974 - 1975	Jr. Basketball	-finalists
1975	Sr. Rugger	-finalists
1975	Track and field	-champions

If you were a member of any of the above teams, or your name is above, come out to the S-Dance to receive your award. To confirm your membership on any of the above teams, go to the stores and check the team lists.

SKIING

The annual Interfaculty Ski Meet will take place on Thursday, March 4th, at Mansfield beginning at 10:30 A.M. If you wish to ski for the Engineering team, leave your name and phone number at the stores, or call Terry Gudzowsky (239-4437). The competition is open, and therefore teams may be co-ed. There is a \$7.00 per person entry fee, and bus service will be provided at \$4.00 per person extra. If you ski for the Engineering team, these expenses will be paid for. Enter soon. (please!)



SR. ENGINEERING BASKETBALL

The Senior Engineering Basketball squad is sporting a 9-0 record as of Jan. 30/76 and are leading the Division 1 Standings by a full two games.

The team's latest victories were over Erindale 67-43 and the second place Jocks 76-74.

The Senior team is a potential championship team this year under the superb and keen leadership of that famous Varsity ballplayer Richard (Kushy) Kurczyk. The ranks of the Senior Squad are:

CHRIS (TURK) TUEPAH; OUT OF MIDLAND HIGH SCHOOL

ANGELO (SPAGHETTI LEGS) HATTACCHIONE; GEORGE HARVEY

CHRIS (GOT A CIGARETTE?) MIFFLIN; NORTH TORONTO

RON (GUNNER) GRATZ; VAUGHAN ROAD COLLEGIATE

EMILIO (TACCR) TACCONELLI; MACKENZIE C.I.

DAN (THE HOCKEY PUCK) BLOCKA; ALDERWOOD H.S.

DEREK (AND THE DOMINOS) BATTY; KIPLING COLLEGIATE

RICK (RHINO) KLESTINEC; RUNNYMEDE

CASEY (AND THE SUNSHINE BAND) BARTUSEVICIUS; MICHAEL POWER

JOHN (HONDO) GEORGE; NORTH TORONTO

NEOPHYTOS (HARRY) HARRIS; VAUGHAN ROAD COLLEGIATE

JOHN (MEDALLARK) MEDAL; RUNNYMEDE

CIVIL SPORTS TOUCH FOOTBALL

In the fall term "Tequila 4" sported a 7-2 record in the intermediate touch football league. The team lost in the quarter finals under somewhat debatable play calling by our renowned ex-quarterback R.K. The "TEQUILA 4" has only lost 3 games in two years of competition. Let's see if CIVIL III can do better if they ever get to 4th year. The TEQUILA team was bolstered by fine performances all season long by PETER LARGE, JOHN EGAN, JOHN TRIST, RON GRATZ, DONALD CRUICKSHANK, EDDIE MAZZARRATTI, ANGELOS MATTACCHIONE, V.D. ROSA. The team members appreciated the loyal fan support at all their games. Thanks CYRIL, MARTA, LIVIA, JOYCE and LAUREN.

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UNIVERSITY BOOKROOM

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FEBRUARY

SALE

begins

Monday, Feb. 2nd

*damaged U of T

press books *

* technical reference

* reduced stock



PSYCHOTIC?

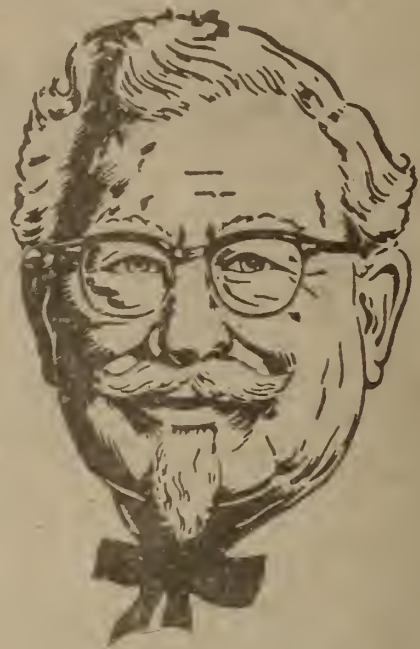
Look into this if you want a Fabulous Future! Learn to

SWEAT YOUR ASS OFF

from the "experts" with more experience and international success stories than all others combined.

There has never been such a good time as NOW to enrol in the

**ENGINEERING SCIENCE
SCHOOL OF MASOCHISM**

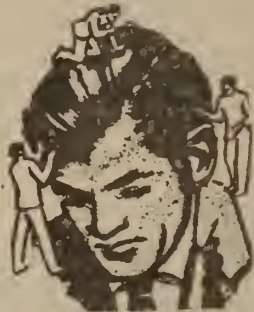


Let our staff of trained sadists tighten the thumbscrews on YOU!

Svetoyr Balsov, world-famous Olympic champion learned early the professional secret of constantly maintaining a cruel, merciless workload. Twenty-five years ago the university establishment was extremely skeptical of his startling discovery that Eng Sci reverses much of the damage caused by sustained sanity and eight hours of sleep a night.

Teams of professors from leading institutions around the world investigated the program. They thought they would scoff at the claims, but instead they were nauseated. "The question now," concluded a report in one eminent S&M journal, "is not 'Does it work?' The question is 'How does it work?'"

Try it for yourself. If you don't actually begin to see measurable, real results in just a few days, we will send your money back in full without any question.



Just a few of our famous grads tell how the Engineering Science School of Masochism CHANGED THEIR LIVES!



1

2

3

4

YES! I want to lose my mind!

Mr.

Mrs.

Miss

Other

First Name

Last Name

My Name

Current Address or Rest Home

City or Republic

Age

Signature (Parent must sign if under 3)

"Eng Sci made me what I am today" - Jim Kennedy
 "In mind but not in bawdy" - Robbie Jaunkalns
 "Ummmmmmmm um" - I Graham
 "Electricals still work harder and do it better" - Jon Roma
 "Photographs. Eh?" (NUDGE, NUDGE) - Doug Pickett
 "I was a teenage Eng Sci" - Bruce Thomson
 "Because it was there" - Erik Car 7T9 AR
 "Intuitively obvious" - Doug Chmara
 "I never knew I was a literary genius. I still don't" - Pat Murray
 "Old Eng Sci's never die, they just fail away" - M
 "I did it. I know I did it. I did a problem set" - C P U
 "All summer long" - Rob West
 "Leave my name out of this" - Bil Weiner
 "Obscene phone calls accepted, Sun 8 p.m. - 11 p.m. 284-6151" - Deb
 "Engineering?" "What's Engineering?" - Dave Jamieson
 "Grads of Eng Sci, like yourself, you're in the shithouse" - Paul Baker
 "Layout" - Gretchen Groingrabber
 "A friend. Who says how much?" - Graham Wideman
 "The First Arts & Science Engineer" - Greg Fitz
 "F, R O S H have a lot to learn about the TOIKE" - Greg Mackay
 "Mushrooms are an endangered species" - Michael Ellis
 "And the band played on. Hey Jude" - Jim Burpee
 "I'm in just for the fun of it" - PNR Nomen
 "See you at the Sado-Masochist Festival" - Bruce Fucler
 "This is analogous to the dogshit example" - Mark Vincent
 "Soft drinks in friddee. Beer in the men's room" - Eric
 "So that's how they make beer" - Dug
 " $N(x) \cos(kx - wt) + i \sin(kx - wt)$ complex harmonic motion" - Barry Lay
 "T E B S A" - Zorch
 "ELLEN ROCHMAN PROCOPTIONS NEGOTIABLE" -
 "Tears off beer labels intact" - eh George" - Don Melton
 "Days of Future Past" - Flash
 "Spirit of N. Sigh passed" - Chuck Spear
 "Come unto me. I am beauty. I am the light. I am wonder" - Nick R
 "Skung again" - Dive Dobson
 "I told you I wasn't going to help" - Heidi Breslauder
 "So I'll flunk all by myself" - Eric Hartwell

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